IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	**Confirmation No. 8727**
Yoichi MORI et al.	:	Attorney Docket No. 2004_1936A
Serial No. 10/517,063	:	Group Art Unit 1793
Filed April 15, 2005	:	Examiner Ngoc Yen M. Nguyen
METHOD AND APPARATUS FOR TREATING EXHAUST GAS	:	**Mail Stop: AMENDMENT**

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents,
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Yoichi Mori, the undersigned, a citizen of Japan, residing at 1-6-18 Jukkenzaka Chigasaki-shi Kanagawa-ken 253-0045 Japan, do hereby declare:

1. That I am a co-inventor of the above-identified application.

2. That I graduated from Osaka University on March 31, 1979 with a degree in Chemical Engineering.

3. That I have been employed as an engineer and a researcher at Ebara Corporation from December 1986 to the present, and that I have engaged in development for an exhaust-gas treating apparatus in association with semiconductor fabrication system and test evaluation of gas analysis and processing material.

4. That I have received the Technical Achievement Award (prize No. 155) from The Society of Chemical Engineers, Japan in 2008 for "development of apparatus for processing and decomposing a fluorine global warming gas."

5. That in order to show the novelty and unobviousness of passing an exhaust gas

through a detour path formed by plural plate members as recited in the above-identified application, I have under my control and direction conducted the following experiments. The particulars and results of the experiments are set forth below.

The experiments were conducted for the purpose of studying the difference in the temperature of an exhaust gas when passing the gas through the detour path formed by the plural plate members, and the temperature of an exhaust gas when passing the gas through a straight path with no plural plate members (i.e., not passing the gas through the detour path).

An apparatus used in the experiments was substantially the same as illustrated in FIG. 3 of the above-identified application. However, the apparatus used in the experiments differed slightly in that a heater was provided around a catalyst.

The conditions of the experiments are shown below in Table 1.

	Passing gas through detour path	Without passing gas through detour path
Set temperature in heating section	750 °C	1000 °C
Set temperature in catalyst section	700 °C	700 °C
Flow rate of exhaust gas	71 l/min	71 l/min
Flow rate of H_2O added to the gas	4.7 ml/min	4.7 ml/min

Table 1

The temperature of the exhaust gas was measured at a position between the heating section and the catalyst section. The results of the experiments are shown below in Table 2 (i.e, the temperature measurements of the exhaust gas at a position between the heating section and the catalyst section are shown below in Table 2).

	Passing gas through detour path	Without passing gas through detour path
Temperature of the exhaust gas	771 °C	674 °C

Table 2

The above experimental results show that the exhaust gas was heated to a high temperature when passing the gas through the detour path. On the other hand, when heating the exhaust gas without passing the gas through the detour path, the gas was heated to a lower temperature even though the set temperature of the heating section was rather high in comparison.

As can be seen from the experimental results, there exists a remarkable advantage of heating the exhaust gas while passing the gas through the detour path formed by the plural plate members such that the exhaust gas is heated effectively to high temperatures while the set temperature of the heating section can be relatively low. It is presumed that this is due to the fact that the plate members themselves are heated to high temperatures, and that heat radiates therefrom. In addition, the adjacent plate members are heated by each other to form a so-called "hot spot" in the detour path.

When the exhaust gas is not passed through the detour path, a contact area between the heat-radiation surface and the exhaust gas is small and the exhaust gas is not heated by the above-mentioned hot spot. Consequently, even though the temperature of the heating section is set high, the exhaust gas is not heated to a comparatively high temperature, as shown in the experimental results of Table 2.

Based on the results of the experiments, it was discovered that heating of the exhaust gas while passing the exhaust gas through the detour path formed by plural plate members greatly increases the temperature of the gas in comparison to heating of the exhaust gas without passing the exhaust gas through the detour path. Therefore, the fluorine compound in the exhaust gas can be decomposed by adding H_2O to the high-temperature exhaust gas at the subsequent step.

I further declare that all statements made herein of my own knowledge are true and all statements made on information and brief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or may patent issuing thereon.

Date:

Yoichi Mori

Yoichi Mori

April, 02, 2010